



City and County of Honolulu

JOHNSON
CONTROLS

Honolulu Hale

Cogeneration System Overview

December 13, 2001

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Project Site

Honolulu Hale
City & County of Honolulu "City Hall"



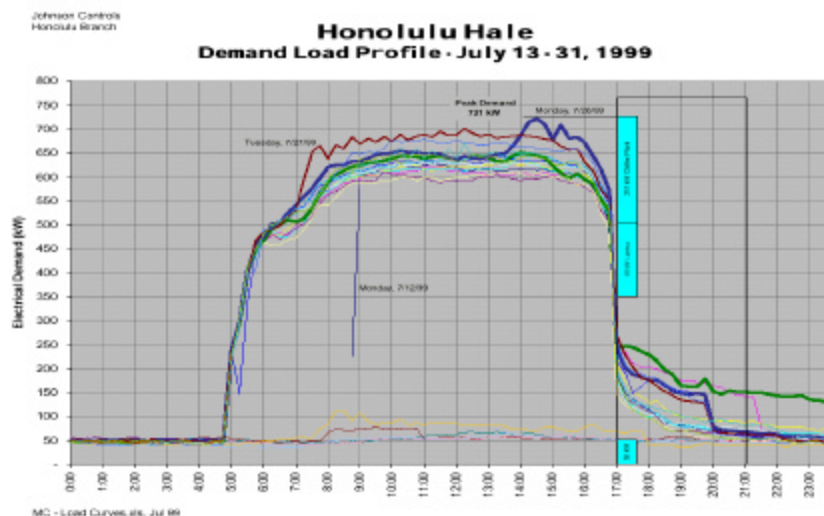
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Facility Challenges

- Support of critical public service activities
- Aging physical plant equipment (27 yrs)
- Energy & operational inefficiencies
- Comfort & productivity improvement
- Deferred maintenance
- Safety and Regulatory requirements
- Risk management
- Required system uptime

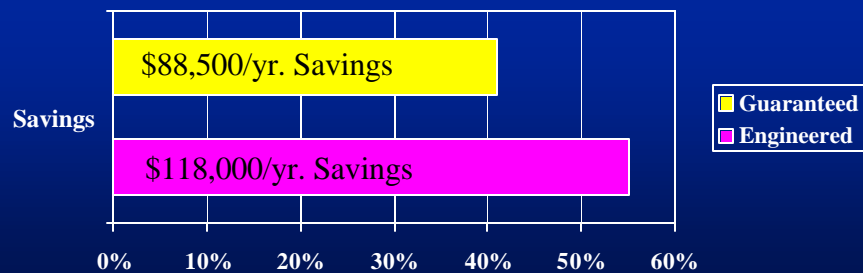
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Electrical Load Profile



Proposed Energy Expenditure Savings

- **Energy Cost Reduction** - Guaranteed Annual Utility Cost Reduction of **31%**
- **Meet C&C of Honolulu Goals** - Significant Step towards Energy Reduction & Operational Flexibility Goals



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Energy Conservation Measures

- 150T / 250T High-Efficiency Centrifugal Chillers
- 220 kW Cogeneration System with 55 ton Absorption Chiller.
- 500T Induced Draft Cooling Tower
- Primary/Secondary Chilled Water Loop Conversion with Variable-Speed pumping
- 2-way Chilled Water Valve Conversion
- T8, Elec. Ballasts, Compact Fluorescent lamps, LED Exit signs, Occ. sensors.
- Energy Management System with Pneumatic to Digital Control Retrofit.
- Exterior Air Handler Unit Replacement
- Electrical Cabling Upgrade

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ECM 1.1 & 1.2 Lighting Retrofits

- Office Lighting
- Architectural Lighting



- T-8 Lamps w/Electronic Ballasts, Compact Fluorescent Lamps
- LED Exit Signs
- Occupancy Sensors
- Install Correct Period Fixtures
- Improve Lighting levels and Quality for Improved Work Environment
- Reduce Lighting Maintenance Costs

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ECM 2.1 Central Plant Replacement

- Chillers & Cooling Tower
- Pumping Systems



- Replace Failing Equipment and meet Cooling Requirements
- Increase Operational Flexibility
 - High-Efficiency Chillers
- Induced Draft Cooling Tower
- Primary/Secondary Pumping
- New Electrical Cables to meet Building Code requirements

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ECM 3.1 New AHU Valves & DDC Control

- New Energy Management System
- Digital Temperature Control

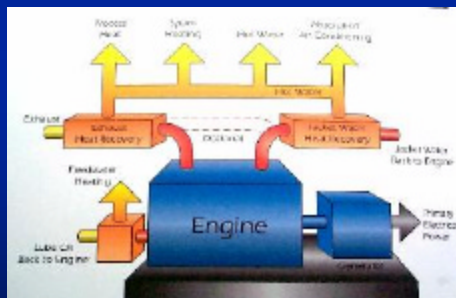


- Replace Failing Equipment and Improve Temperature Control for Productivity and Comfort Requirements
- Increase Operational Flexibility & Scheduling Abilities
- Quicker response to Hot & Cold Calls
- New AHU Control Valves
- Digital Controllers tied to Energy Management Control System Network

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ECM 4.1 Cogeneration System

- 220kW Cogenerator
- 55ton Absorption Chiller



- Increase Operational Flexibility with variable Cooling Capacity and Fuel Selection Choice
- Reduced Operational Costs
- Increase ability to operate facility during power outages
- Reduce “On-Peak” Electrical Demand to utilize time-of-use Utility Rates
- Better Utilization of existing Imported Oil to Hawaii

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Project Milestones

- ◆ Implementation Contract Awarded - Sep 2001
- ◆ Design Engineering - January 2002
- ◆ Lighting Retrofit - February 2002
- ◆ Central Plant - August 2002
- ◆ Project Completion - January 2003

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Mahalo

Are there any Questions?

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